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DETERMINATION OF MEDICAL TASK TIMES IN AN EMERGENCY CENTER SETTING

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USAF SCHOOL OF AEROSPACE MEDICINE
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NOTICES

This interim report was submitted by personnel of the Radiation Analysis Branch, Radiation Sciences Division, USAF School of Aerospace Medicine, Human Systems Division, AFSC, Brooks Air Force Base, Texas, under job order 7757-06-F1.

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The Office of Public Affairs has reviewed this report, and it is releasable to the National Technical Information Service, where it will be available to the general public, including foreign nationals.

This report has been reviewed and is approved for publication.

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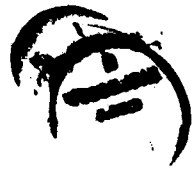

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The determination of how well a military medical facility will perform when faced with an intense casualty stream requires a detailed understanding of the appropriate medical treatments for the specific casualty types expected. This paper describes a method for defining treatment protocols, assessing task times, and ascertaining medical expertise needed for successful task completion. The method used is a medical adaptation of classical time and motion analysis. The specific injury types of penetrating injury to the thorax and/or abdomen were selected for study. Data from the observation of seventeen wounded individuals is provided in detail and in summary form.

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DETERMINATION OF MEDICAL TASK TIMES IN AN EMERGENCY CENTER SETTING

INTRODUCTION

The determination of how well a military medical facility will perform when faced with an intense casualty stream requires an understanding of the appropriate medical treatments for the specific casualty types expected. The Air Force Surgeon General's Wartime Medical (WAR-MED) Work Center Description (WCD) project, which has now evolved into the Medical Readiness Systems Analysis, or "MRS A," has the goal of identifying and characterizing tasks that Medical Service personnel will perform in each of the Air Force's wartime four-echelon health care components. These tasks and their characteristics would be used to validate and justify resources and planning for wartime health care delivery.

As a part of MRS A, multiple broad injury categories are being studied with regard to treatment protocol, specific medical tasks performed, task times, indications for specific procedures, and skill levels of medical personnel performing these procedures, in both the pre-hospital and emergency center settings [1]. This report describes a method for defining treatment protocols, assessing task times, and ascertaining medical expertise needed for successful task completion. The method used is a medical adaptation of classical time and motion analysis [2]. The specific injury types of penetrating injury to the thorax and/or abdomen were selected for study.

A review of the literature published during the last 5 years, reveals that there is scant scientific data of the type needed in the MRS A. In most articles, the approach to Emergency Medical Service (EMS) trauma care is incompletely specified. The exclusion of important variables, such as type and anatomic location of injury, efficiency and skill of rescuers, proximity and actual capabilities of definitive care resources, and logistics of the pre-hospital setting, confuses the analysis of potential therapeutic modalities and management strategies. Further, most medical articles reviewed concerning emergency center (EC) care of trauma, specifically, penetrating injury to the thorax and abdomen, either address trauma care broadly (i.e., stresses concepts in trauma care without delineating specific treatment modalities), or center on current controversies in care (i.e., specific indications for diagnostic peritoneal lavage vs. exploratory laparotomy, or indications for emergency center thoracotomy). The medical trauma literature rarely provides information on specific treatment protocols with emphasis on tasks performed, task times, and skill levels of medical personnel. On the other hand, indications for medical procedures are readily available in any standard textbook of surgery, but details of treatment protocols are still lacking. Given this situation, the first author of this report attempted to collect data on the previously mentioned treatment protocol parameters by direct observation of time and motion.

The city of Houston, Texas has intensive, academic physician involvement in its EMS system, and consequently has developed a systematic approach and rationale for its pre-hospital care strategies. The average response time for the Advanced Life Support (ALS) units of the Houston Fire Department, which carry at least one Emergency Medical Technician (EMT)-Paramedic, is 6 min. This average time is skewed by occasional long responses in some areas of newly annexed city territory. Most ALS responses in the central city are made within 4 min of receipt of calls. There were 68,000 EMS transports in 1989. The majority of patients with penetrating injuries greater than code 1 status were taken to Ben Taub General Hospital (BTGH), the local county facility, which is a Level I Trauma Center/Comprehensive Care Facility staffed by the faculty and house staff of the Baylor College of Medicine. The city's second Level I Trauma Center, which received a significantly smaller percentage of penetrating patients, closed in

October 1989. A strong emphasis is placed on full-time, close physician supervision of the EMS units, including daily on-scene evaluations by the Medical Director and his staff, providing excellent quality assurance. Medically, a strong emphasis is placed on spinal immobilization, in appropriate patients, as well as early endotracheal intubation and rapid transport of critically injured patients to the trauma centers, with intravenous (IV) access usually established en route [3]. The strong medical control and centralization of medical direction, through radio and on-site supervision, in the pre-hospital setting, combined with the large volume of penetrated trauma patients treated at BTGH, provided a setting of standardized patient care optimal for this study.

PURPOSE

The determination of how well a military medical facility would perform when faced with an intense casualty stream requires an understanding of treatment for the specific casualty types expected. This time and motion study is a pilot study to determine a method for ascertaining well-delineated tasks, task times, and required medical personnel for the treatment of anticipated injuries in a post-attack environment. This information will be used to structure a model for the determination of manpower and material resource requirements necessary to treat casualties with optimum effectiveness.

METHOD

Review of Literature

A literature review of penetrating injury to the thorax and penetrating injury to the abdomen covering the time period of 1984-89 was performed using the Medline database produced by the National Library of Medicine in Rockville, Maryland. Additionally, treatment of traumatic injuries with particular attention to penetrating injury to the thorax and abdomen was reviewed in current textbooks and review books of surgery. This literature review was performed to achieve an initial concept concerning the medical tasks that would be observed in the time-motion data collection. Basic forms for record keeping were developed and these forms and actual data collected can be found in the Appendix.

The following texts were reviewed to obtain general insight into strategies of trauma care:

Trunkey, D. and Lewis, F. Current Therapy of Trauma - 2. B.C. Decker, Inc., Philadelphia, 1986.

Klippel, A. and Anderson, C., eds. Manual of Emergency and Outpatient Techniques: Washington University Department of Surgery. Little, Brown & Co., Boston, 1979.

Eiseman and Wotkyns, Surgical Decision Making. W.B. Saunders Co., Philadelphia, 1978.

Schwartz, S. Principles of Surgery. 5th ed. McGraw-Hill Book Co., New York, 1989.

The following articles provide specific information on the treatment of penetrating injuries:

Pepe, Paul, Emergency Medical Services in the City of Houston. From the EMS Medical Director's Handbook of the National Association of Emergency Medical Services Physicians.

Pepe, P., Stewart, R., Copass, M. Pre-hospital Management of Trauma: A Tale of Three Cities. Annals of Emergency Medicine, 15:12 Dec 1986, pp. 157-163.

Gervin, A., and Fisher, R. The Importance of Prompt Salvage of Patients with Penetrating Heart Wounds. The Journal of Trauma, Vol. 22, June 1982, pp 443-448.

Gibson, D. Abdominal Trauma. Trauma Quarterly, 1987, 4(1), 11-25.

Mattox, K. Priorities in Repairing a Penetrated Chest. Emergency Medicine, Aug 15, 1982, pp. 282-288.

Lewis, F. Thoracic Trauma. Surgical Clinics of North America, Vol. 62, No. 1, February 1982, pp. 97-111.

Ivatury, R and Rohman, M. Emergency Department Thoracotomy for Trauma: A Collective Review. Resuscitation, 15(1987) 23-35.

Nance, F. et al. Surgical Judgment in the Management of Penetrating Wounds of the Abdomen: Experience with 2212 Patients. Annals of Surgery Vol. 179, No. 5, May 1974, pp. 639-646.

Cloonan, C. Management of Gunshot Wounds in the Emergency Department. Trauma Quarterly, 1987, 4(1), 27-37.

Jacobs, L. Initial Management and Evaluation of the Multisystem Injured Patient, part 1. Journal of the National Medical Association, Vol. 79, No. 4, 1987, pp. 361-370.

Moore, E., et al. Mandatory Laparotomy for Gunshot Wounds Penetrating the Abdomen. The American Journal of Surgery, Vol. 140, Dec 1980, pp. 847-851.

Lowe, R. et al. Should Laparotomy Be Mandatory or Selective in Gunshot Wounds to the Abdomen? The Journal of Trauma, Vol. 17, No. 12, Dec 1977, pp. 903-907.

Oreskovich, M. and Carrico, J. Stab Wounds of the Anterior Abdomen: Analysis of a Management Plan Using Local Wound Exploration and Quantitative Peritoneal Lavage. Annals of Surgery, Vol. 198, No. 4, Oct. 1983, pp. 411-419.

Jones, T. et al. Cardiopulmonary Arrest Following Penetrating Trauma: Guidelines for Emergency Hospital Management of Presumed Exsanguination. The Journal of Trauma, Vol. 27, No. 1, Jan. 1987, pp. 24-31.

Beall, A. et al. Considerations in the Management of Penetrating Thoracic Trauma. The Journal of Trauma, Vol. 8, No. 3, 1968, pp. 408-417.

Subjects

The 17 subjects are adults aged 17-49 who were transported to the BTGH in Houston, Texas by Houston Fire Department EMS units. These patients all had penetrating injury to the thorax and/or abdomen via gunshot wound, shotgun blast, or stabbing. To best simulate expected United States Air Force (USAF) casualties in a post-attack scenario with the previously described injuries, pregnant women

and children were excluded. Patients with penetrating head injury in addition to penetrating injury to the thorax/abdomen, and patients whose injuries were found not to actually penetrate the thoracic or peritoneal cavities were also excluded.

PROCEDURE

All data were acquired over a 4 week period (about 90 man hours) in the surgical side of the emergency center of BTGH in Houston, Texas. Data were collected in 3 stages. The first stage began when an ALS unit in the field made contact with the Houston Fire Department's EMS Telemetry room, located in the emergency center at BTGH. Contact time, condition of the patient on examination in the field, vital signs, and all major resuscitative activities were recorded by the first author using a check sheet in the EMS Telemetry room. Changes in patient status during transport were also recorded. The second stage began when the patient arrived at BTGH. The time of arrival, vital signs on arrival, all tasks performed, start and finish times for all tasks performed, indications for certain procedures, number and skill level of attendant medical personnel, and time of removal from the surgical shock room were all recorded by the author. In the third stage, data collected in the first stage was confirmed and completed by review of the Fire Department's official record of the incident.

All data collected were reviewed for consistency of protocol, task times, and personnel. Protocol and task times were compared to the Army's DEP-MEDS data where available.

One of the surgical shock rooms at BTGH is equipped with an observation window. In all surgical shock rooms multiple medical personnel rapidly attend to each patient, and the doorways are routinely filled with observers consisting of medical and paramedical personnel, and other emergency center patients. Therefore, we believe that the actual collection of this data by observation did not lead to alteration of normal protocols, task times, or attendant medical personnel availability. All data were collected with the approval of the Director of Emergency Surgical Services at BTGH, Dr. Kenneth Mattox, and the Medical Director of the City of Houston EMS system, Dr. Paul Pepe. Patient anonymity has been maintained in all cases.

RESULTS

The final study population consists of 17 subjects; 13 received penetrating injury via stabbing, 3 via gunshot wound, and 1 via shotgun blast at close range. Four patients received penetrating injury to the thorax, 8 to the abdomen, and 5 to both thorax and abdomen. The average patient age was 29 years. Details for each patient are provided in the Appendix.

PRE-HOSPITAL

The average transport time from dispatch to hospital was 32 min. Average time at the trauma scene was 10 min. Average time from arrival at the scene to arrival at the hospital was 22 min. All these times are skewed due to long transport distance and/or field circumstances (i.e.,combativeness, ethanol intoxication) in a few patients. Two patients were transported via Basic Life Support (BLS) units without capability of fluid resuscitation. The other 15 patients were transported by ALS units with EMT-Paramedics with authority to perform IV cannulation and endotracheal intubation. Three of the patients were transported Code 3, indicating injuries that interfere with vital physiologic function and immediately threaten life (i.e., uncontrollable hemorrhage). These patients are the most likely to require emergency

center thoracotomy or rapid laparotomy to occlude injured major vessels. The other 14 patients were transported Code 2. This category includes most penetrated patients. These patients have injuries that offer no immediate threat to life, such as a gunshot wound or stab wound to the chest or abdomen in which vital signs are stable. This group generally requires surgery within 1 to 2 hours, but has time for initial diagnostic workup.

The initial medical assessment for all subjects was performed in the field. Sixteen subjects had spontaneous eye opening; all had a gag reflex; 16 were oriented; all obeyed motor commands; all moved all extremities; 16 had minimal or moderate bleeding; 15 had normal skin temperature; 13 had normal membrane color; and 15 had normal capillary refill. Only 6 subjects presented with an initial systolic blood pressure $\leq$ 90 mm Hg. All Code 2 patients maintained stable vital signs during transport.

Pre-hospital therapy predominantly consisted of airway support via oxygen by non-rebreather mask or nasal cannula (16 patients), cervical spine and/or spinal immobilization (7 patients), and fluid resuscitation via large bore IV cannulation and administration of a crystalloid solution (14 patients). Patients with multiple lacerations received bandaging, and blood was drawn for laboratory work in most patients receiving IV therapy. Virtually all IVs were started en route.

HOSPITAL

Review of data reveals consistent treatment protocols for patients with penetrating injury to the thorax and/or abdomen. In each case, the patient was met by an emergency center team consisting of an average of 6 people, including a third year surgical resident (the chief resident of the surgical side of the emergency center and team leader), a surgery intern, and some combination of Registered Nurses (RN), Licensed Vocational Nurses (LVN), Physician Assistants (PA), and/or medical students. Many activities occurred simultaneously, and the treatment protocol was varied slightly with the specific needs of each patient.

The common tasks performed in cases of penetrating injury to the thorax and/or abdomen are: cervical spine evaluation, vital sign check, removal of all clothes and assessment of extent of injury, IVs established if not placed before arrival, laboratory work drawn, local exploration and/or assessment of wound, and placement of a Foley catheter with subsequent dipstick urinalysis. All patients with penetrating injuries receive a tetanus shot before leaving the shock room. In penetrating thoracic injury, all patients receive a chest x-ray, and subsequent tube thoracostomy if indicated. Thoracic injury is not aggressively explored manually, as this may induce or worsen an existing pneumo- or hemothorax. In cases of stab wound to the abdomen, wounds are gently explored manually to determine whether penetration of the peritoneal cavity has occurred, and to assess extent of internal injury as well as possible. Rectal examination with stool guaiac is also performed as a gross screening for bowel injury. Depending on location, extent, urgency, and modality of injury, a nasogastric (NG) tube may be placed, and a one-shot intravenous pyelogram (IVP) may be performed. In a situation where penetrating injury to both the thorax and abdomen has been sustained, the appropriate combination of the above procedures are performed. Diagnostic peritoneal lavage and emergency center thoracotomy are performed when indicated.

A summary of task times for each patient is shown in Table 1 where task time means and standard deviations are also given. In this Table, "IV" signifies placement of a simple IV line, "Central Line" represents placement of a supraclavicular central venous line, "Wound expl." signifies wound exploration, and "thoracostomy" refers to tube thoracostomy. The task time for chest X-ray includes all activities from X-ray order to interpretation.

TABLE 1. TASK TIMES OF PROCEDURES PERFORMED FOR EACH PATIENT *

Patient number	C-Spine X-ray	Vital signs	IV	Central line	Draw lab	Remove clothes	Chest X-ray	Foley	Urin-alysis	NG tube	Wound expl.	Thora-costomy
1	10	1				3	7	2	1		3	
2		1			1	2	4	2	1			14
3		1		4	1	4	7		1			13
4		1			1	1	4	2	1		1	
5	10	2			3	5	9					
6		2		3	1	2		3	1	4	5	
7		1	2		3	4	8				4	
8		3	5	4	1	1	5	2	1		5	
9	8	1			2	2	8	3	1		2	9
10		2		4	1	3	10	2	1	2	5	11
11		2	7	4	1	2	6	2	1	2		4
12		1				1	7				1	
13		1			7	2	5				3	15
14		1			1	2	4	2	1	2	4	
15		2			1	2		2	1		3	
16		1			1	2		3	1		3	
17		2			2	2	5	2	1	2	4	
Mean	9.3	1.5	4.7	3.8	1.8	2.4	6.4	2.3	1.0	2.4	3.3	11.0
Standard Deviation	1.2	0.62	2.5	0.45	1.6	1.1	1.9	0.45	0.0	0.89	1.4	4.0

* All task times are given in minutes with all measurements rounded to the nearest minute.

This is the first time, to our knowledge, that measurements of this sort have been taken. In general, the task times seem to be quite regular with limited variability. However, some tasks (e.g., IV placement, drawing laboratory blood, and thoracostomy tube placement) may have a right tailed distribution, as suggested by the presence of occasional large task times.

A review of procedures performed on each patient shows that some procedures are performed on all or nearly all patients with penetrating injury as a part of initial assessment upon arrival in the shock room. Many of these procedures occur simultaneously. All patient's vital signs are checked, cervical spines evaluated when immobilized, and all clothes removed as an initial priority. Removal of all clothing is necessary to accurately and rapidly assess extent of injury, as wounds to the back, axilla, and groin are commonly overlooked. All patients with penetrating thoracic injury receive a chest x-ray (CXR), as do patients with a penetrating abdominal injury with a trajectory suggesting thoracic entry. All patients receive IVs for fluid resuscitation if not previously established, and clinical laboratory work consisting of a spun hematocrit, type and crossmatch, chem-20, complete blood count (CBC) with differential, prothrombin time/ plasma thromboplastin time (PT/PTT), and drug screen. All patients receive a Foley catheter and urinalysis as a means of assessing renal output and overt injury to the kidneys, ureters, or bladder as evidenced by gross or microscopic hematuria. Of the 17 patients studied, the few upon which all of the just mentioned procedures were not performed in the shock room had specific circumstances (i.e., very good condition or rapidly worsening condition) that made it appropriate to complete these procedures after removal from the shock room, in either a holding area or the operating room.

Additional procedures commonly performed on specific patients when indicated included central line placement, tube thoracostomy, NG tube placement, performance of a one-shot IVP, diagnostic peritoneal lavage, and emergency center thoracotomy. Central line placement is specifically indicated whenever initial attempts at peripheral IV cannulation fail, usually due to hypovolemia secondary to hemorrhage, whenever an additional large bore line is needed for aggressive fluid resuscitation, or whenever monitoring of central venous pressure as a reflection of available blood volume and valuable diagnostic tool is required. Tube thoracostomy is indicated by the presence of pneumothorax, hemothorax, or pneumohemothorax. Nasogastric tube placement is indicated by known or high suspicion of injury to the gastrointestinal (GI) tract, as a method of decompression and assessment of amount and type of fluid loss. The NG tube placement is also indicated by excessive vomiting in order to decrease risk of aspiration. A one-shot IVP is indicated in any case of multiple, massive abdominal injury or high suspicion of renal injury, as a gross assessment of renal injury. Diagnostic peritoneal lavage is indicated when the need for abdominal exploration is not clear, and when physical assessment is not productive (i.e., when the patient is unconscious or neurologically impaired). Major indications for emergency center thoracotomy include hypovolemic cardiac arrest despite vigorous blood volume replacement plus closed chest massage and defibrillation, and cardiac arrest with penetrating injury to the chest.

A comparison of the protocols and task times acquired in this study with available DEP-MEDS data is complicated by the fact that DEP-MEDS task descriptions are sometimes too ambiguous for correlation. However, a general comparison of this data with DEP-MEDS injury numbers 66 and 81, which are similar injuries, reveals similar protocols. However, it is unclear whether the DEP-MEDS protocol requires complete clothing removal for inspection of injury, or if Foley catheterization is mandatory as a means of monitoring renal function. In the case of penetrating thoracic injury, there is no provision in the DEP-MEDS data for tube thoracostomy, and in the case of penetrating abdominal injury, NG tube placement, diagnostic one-shot IVPs, and diagnostic peritoneal lavage are unmentioned. Given the high emphasis on spinal immobilization with particular attention to cervical spine evaluation within the Houston system, the absence of this procedure in the DEP-MEDS data represents a major discrepancy between the two protocols. Comparison of task times to the DEP-MEDS data, where available, shows only one major

discrepancy. The time necessary for central line placement, recorded as 15 min in DEP-MEDS, is 4 min in this study.

The medical team receiving each patient in the emergency center consisted of 3-8 people, with an average of 6 people, consisting of 1 third year surgical resident (the team leader), 1 surgical intern, at least 1 RN, and a combination of LVNs, PAs, and medical students. The team was joined by a fourth year surgical resident when needed for surgical consultation or performance of diagnostic peritoneal lavage. Although an informal part of the central medical receiving team, the services of an x-ray technician and radiologist are essential for performance and interpretation of emergent diagnostic studies.

The skill levels of an experienced medical student, an experienced PA, and an experienced LVN are about equal for all tasks that they perform in the emergency center shock room. If one were to rank skill levels and responsibilities from least to greatest, it would be: Medical student, PA, or LVN < RN < surgical intern < third year surgical resident. Skills performed at each level are listed below, with the understanding that any higher skill level person is capable of performing a lower skill level task.

Medical Student or Physician's Assistant or Licensed Vocational Nurse	- order x-rays, take vital signs, remove clothes, start IVs and change IV solution bags, draw blood for lab work, place a Foley catheter, perform a dipstick urinalysis, place an NG tube, perform a rectal exam with stool guaiac, give a tetanus shot, administer IVP dye under physician supervision. When necessary, a Medical Student or PA can suture a laceration.
Registered Nurse	- administer drugs (i.e., bicarbonate, calcium) under physician supervision.
Surgical Intern	- place central line, assess extent of physical injuries, perform tube thoracostomy under supervision of third year surgical resident.
Third year Surgical Resident **Team Leader**	- clear cervical spine, interpret cervical X-ray, explore wound, perform emergency thoracotomy, responsible for overall supervision of team.
Fourth year Surgical Resident	- becomes part of team when surgical consult is required, performs more extensive local/ internal wound exploration when necessary, performs diagnostic peritoneal lavage.
X-ray Technician	- **Absolutely necessary** for shooting all x-rays and processing them.
Radiologist	- **Absolutely necessary** as a consultant for interpretation of radiographs that have questionable or difficult readings and interpretations of most IVPs.

CONCLUSIONS

Review of the data for the 17 subjects presented shows that there is an overall consistency with regard to procedures performed in the pre-hospital setting, and protocol, task times, indications used for performance of certain specific procedures, and skill level and number of attendant personnel in the emergency center. All procedures and protocols performed are also consistent not only with each other, but also with the accepted policies, formal and informal, in each setting, providing a standardized group of subjects for review.

As described in the Introduction, pre-hospital care in the city of Houston by the Houston Fire Department's EMS system places a strong emphasis on spinal immobilization and early endotracheal intubation in appropriate patients. This policy applies to all patients,whether victims of penetrating trauma, blunt trauma, or general medical emergency (i.e., cardiac arrest). In the particular instance of penetrating trauma, this policy is preempted by a rule in which any patient presenting with a systolic blood pressure less than or equal to 90 mm Hg is rapidly immobilized without spinal control, airway is secured, and rapid transport to a Level I trauma center immediately follows. Many of these trauma patients are not completely immobilized due to an immediate life-threatening condition, dangerous environment (i.e., perpetrator is still in the immediate area), or uncooperativeness of the patient. This lack of immobilization of trauma patients accounts for the fact that only 3 patients arrived in the shock room with formal cervical spine immobilization, although all patients with injury near the spinal cord or altered mental status should ideally receive this treatment. In addition, although intubation is the method of choice for securing the airway of any patient who is apneic, has decreased level of consciousness, severe respiratory distress, or vomiting, the alertness, combative nature, and positive gag reflex present in the field of most penetrated patients in this study made it an inappropriate procedure in this group. In our study of the task time data, establishment of IVs en route to the hospital appears to be a valuable procedure, facilitating early fluid resuscitation and saving valuable time in the emergency center.

Based on this study, the authors believe that time and motion observation, by someone with medical training, in the appropriate environment, is a very efficient method for obtaining data of use in a medical operations research effort such as the MRS A project. Tasks, task times, and required medical personnel for treatment of injury types anticipated in a military post-attack environment can be defined by the time and motion observational methodology. Time and motion observation must be preceded, however, by a review of the literature to specify the broad outline of medical tasks as a function of injury type.

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2. Flagle, C.D., Huggins, W.H., Roy, R.H. Operations Research and Systems Engineering. John Hopkins Press, Baltimore, MD, 1960.

3. Courtesy of Dr Paul Pepe, Medical Director, City of Houston Emergency Medical Services.

APPENDIX

This appendix contains the detailed record of the 17 patients observed. With each patient, the injury type is given along with presenting symptoms and a short history. Activity before hospital arrival is sketched. In particular, the time at which the ambulance was dispatched to the field is given in military notation, followed by total dispatch-to-hospital times, time at the scene, and scene-to-hospital time.

Patient status during transport is recorded. A Code 2 transport status relates to those patients that have injuries that offer no immediate threat to life. A Code 3 transport indicates injuries that interfere with vital physiologic function and immediately threaten life.

Patient presenting status is outlined. Best eye opening is recorded as: 4 = spontaneous, 3 = to voice, 2 = to pain, 1 = none. Gag reflex is recorded as: 1 = present, 2 = absent. Best verbal functioning is reported as: 5 =oriented, 4 = confused, 3 = words, 2 = sounds, 1 = none. Best motor function is assessed as: 6 = obeys, 5 = localizes, 4 = withdraws, 3 = flexion, 2= extension, 1 = none. Motor function is further characterized as: moves all extremities, moves upper right and/or left extremities, moves lower right and/or left extremities, seizure activity (general, right or left), and no motor functioning.

Bleeding is characterized as: 1 = none, 2 = minimal, 3 = moderate, 4 =severe. Skin temperature is qualitatively indicated as: 1 = normal, 2 = cool, 3 = hot, 4 = cold. Membrane color is recorded as 1 = normal, 2 =pale, 3 = reddened, and 4 = cyanotic. Capillary refill is 1 = normal (fill in 2 seconds), 2 = delayed (fill in more than 2 seconds), 3 = none.

The paramedics' activity flow bringing the patient to the hospital is recorded in symbolic form. As regards respiratory effort, N = normal, S = shallow, and L = labored. Breath sounds annotations are: E/C = equal and clear, E = equal, L = present on left, etc. Cardiac rhythms are: ST = sinus tachycardia, NSR = normal sinus rhythm. Pupil condition is normally annotated as MN, meaning midrange, normally reactive. Special drugs/therapy are: 10 = oxygen, 11 = plasmalyte, 51 = blood drawn, 52 = cervical collar, 65 = spine immobilization. When only a single number is given under blood pressure (BP) the value refers to palpable systolic pressure.

Age:	17
Sex:	Black Male
Patient:	#1

Injury Type:	Stabbing (two penetrations)
Presenting Symptoms:	Bleeding, pain

History: 17 year old black male involved in stabbing, with one small 1/2 inch wound to left lateral chest at nipple line below the diaphragm in the left upper quadrant. Also, 3/4 - 1 inch laceration mid-line 1" superior to penis. Patient alert and oriented to person, place, and time without loss of consciousness. Bilateral breath sounds equal and clear. Skin warm and dry, positive distal pulses. Placed patient on backboard with oxygen (O_2) 15 l/min by non-rebreather mask. Established intravenous (IV) infusion with a 16 gauge needle in left lower arm, and drew 2 red tops from IV site. Patient remained stable.

Pre-Hospital

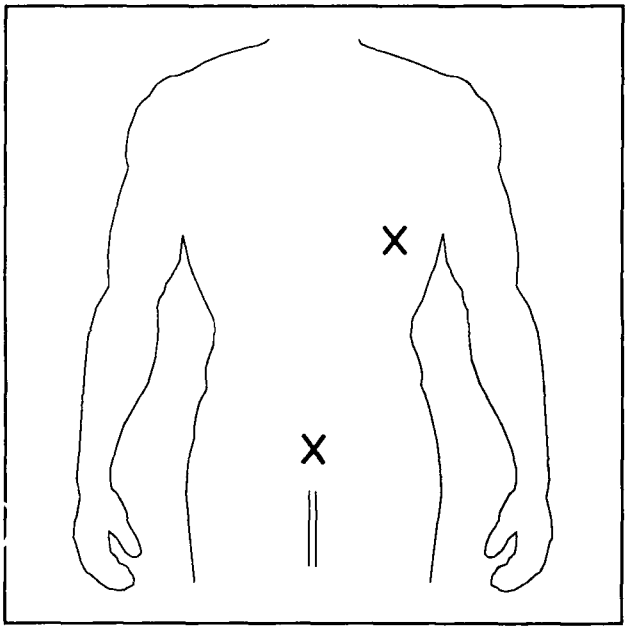
Time:

Dispatched	...
Dispatch - Hospital	25'
At Scene	1'
Scene - Hospital	13'

Transport Code:	2

Presenting Findings:

Best Eye Opening	4
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	3
Skin Temperature	1
Membrane Color	1
Capillary Refill	1
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
2250	30/S	E	100	90	NSR	MN	MN	10 11
2255	28/S	E	100	90	NSR	MN	MN	10 11
2307	28/S	E	100	90	NSR	MN	MN	

Hospital

Arrival Time: 2300
Injury Type: _X_ Abdominal ____ Thoracic

Shock Room Activities	Time
X C-spine ordered	2300
X cleared	2310
X Vital Signs R 16/N, BP 120, HR 100	2300 - 2301
__IV (established en route)	
__Central line	
__Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen) (drawn en route)	
X Clothes removed, assessment of extent of physical injury	2302 - 2305
X Chest X-Ray ordered	2300
X interpreted	2307
X Foley catheter	2310 - 2312
X Urinalysis (dip)	2313 - 2314
__NG tube	
X Exploration of wound (locally)	2306 - 2309
__IVP (one-shot)	
__Tube thoracostomy	
X Other Rectal exam & stool guaiac	2309 - 2310

Out of shock room: 2321
Taken to: Holding area

TEAM

1 Third year surgical resident
1 First year surgical resident
1 RN
1 Medical student
1 X-ray technician
1 Radiologist

Age: 33
Sex: Black Male
Patient: #2

Injury Type: Stabbing (one penetration)
Presenting Symptoms: Bleeding, pain

History: Not dictated.

Pre-Hospital

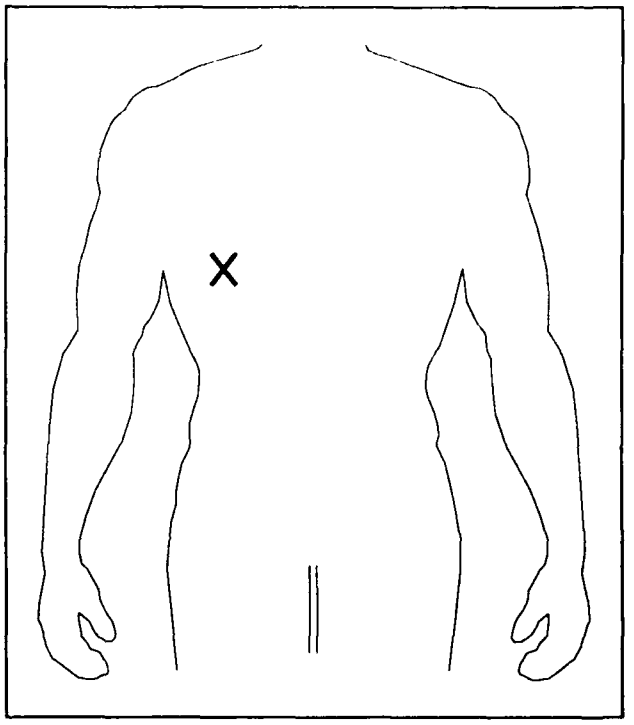
Time:

Dispatched	2234
Dispatch - Hospital	33'
At Scene	11'
Scene - Hospital	23'

Transport Code: 2

Presenting Findings:

Best Eye Opening	4
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	3
Skin Temperature	1
Membrane Color	1
Capillary Refill	1
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
2250	16/N	E/C	98	110	ST	MN	MN	52 65 10 11 51
2255	16/N	E/C	110	100	ST	MN	MN	
2300	16/N	E/C	120	100	ST	MN	MN	

Hospital

Arrival Time: 2307
Injury Type: ___ Abdominal _X_ Thoracic

Shock Room Activities	Time
_C-spine ordered	
__ cleared	
_X_ Vital Signs R 28/S, BP 100, HR 90	2307 - 2308
__IV (established en route)	
__Central line	
_X_ Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen)	2308 - 2309
_X_ Clothes removed, assessment of extent of physical injury	2308 - 2310
_X_ Chest X-Ray ordered/taken - pneumothorax	2318
_X_ interpreted	2322
_X_ Foley catheter	2308 - 2310
_X_ Urinalysis (dip)	2310 - 2311
__NG tube	
__Exploration of wound (locally)	
__IVP (one-shot)	
X Tube thoracostomy	2323 - 2337
_X_ Other: New bag of plasma-lyte	2308 - 2309

Out of shock room: Unknown
Taken to: Holding area

TEAM

1 Third year surgical resident
1 First year surgical resident
1 Registered Nurse, 1 Licensed Vocational Nurse
1 Medical student
1 X-ray technician
1 Radiologist

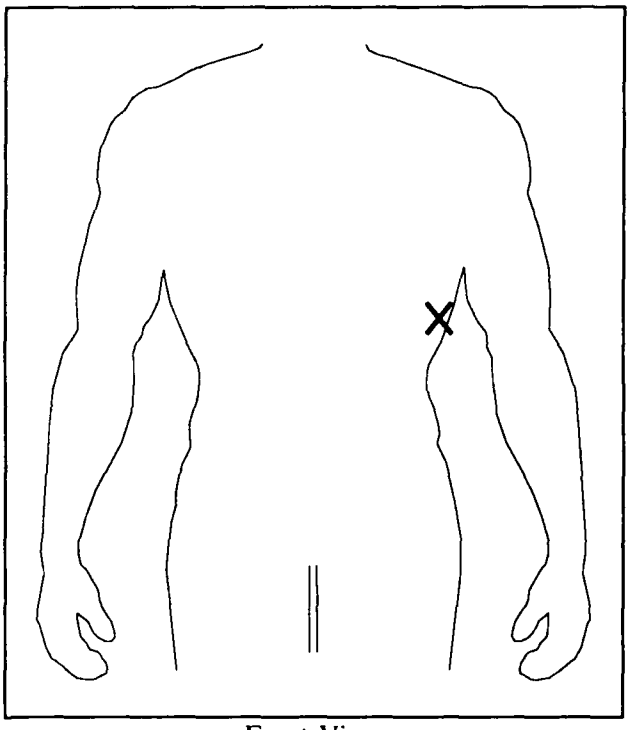
Age:	26
Sex:	Latin American Male
Patient:	#3

Injury Type:	Stabbing (one penetration)
Presenting Symptoms:	Dyspnea, bleeding, pain

History: 26 year old Latin American male with stab wound to left interior axilla approximately 5'' below nipple line. Bilateral breath sounds equal and clear. Abdomen soft, nondistended. Complaining of shortness of breath and pain to left chest on inspiration. Approximately 600 milligrams of plasma-lyte infused by arrival to hospital. 16 gauge IV left forearm. 16 gauge IV right forearm. Oxygen 15 l/min non-rebreather mask.

Pre-Hospital

Time:	
Dispatched	2244
Dispatch - Hospital	25'
At Scene	2'
Scene - Hospital	11'
Transport Code:	2
Presenting Findings:	
Best Eye Opening	4
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	2
Skin Temperature	2
Membrane Color	2
Capillary Refill	1
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
2305	18/L	E	90	110	ST	MN	MN	10 11 11
2309	20/L	E	90	110	ST	MN	MN	

Hospital

Arrival Time: 2309
Injury Type: _X_ Abdominal _X_ Thoracic
(Stabbed through diaphragm from just below it)

Shock Room Activities	Time
__C-spine ordered	
__ cleared	
X Vital Signs R 20/L, BP 90, HR 110	2309 - 2310
__IV (established en route)	
X Central line	2320 - 2324
X Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen) (drawn en route)	2320 - 2321
X Clothes removed, assessment of extent of physical injury (clothes partially removed- patient treated in hallway as shock rooms were full).	2309 - 2311
X Chest X-Ray ordered	2333
X interpreted	2340
__Foley catheter	
X Urinalysis (dip)	2330 - 2331
__NG tube	
__Exploration of wound (locally)	
__IVP (one-shot)	
X Tube thoracostomy	2357 - 0010
X Other	

Out of shock room: 0015
Taken to: X Holding area

TEAM

Note: Overall therapy slightly prolonged in this patient - shock rooms were full so x-rays were delayed

1 Third year surgical resident
1 First year surgical resident
1 LVN
1 X-ray technician
1 Radiologist

Age: 35
Sex: Latin American Male
Patient: #4

Injury Type: Gunshot wound (one penetration)
Presenting Symptoms: Bleeding, pain

History: Latin American male with complaint of gunshot wound left upper quadrant abdomen. Patient presents lying on sidewalk. Alert and oriented. Pupils equal and reactive to light. Breath sounds decreased on left side. Abdomen soft and non-tender. Moves all extremities equally. Skin cool and clammy; oxygen non-rebreather 15 l/min, electrocardiogram started, blood drawn. Patient's spine immobilized. Bilateral IVs plasma-lyte antecubital run wide open. Attempted to intubate, but unable because of gag. Ben Taub General Hospital Code 3.

Pre-Hospital

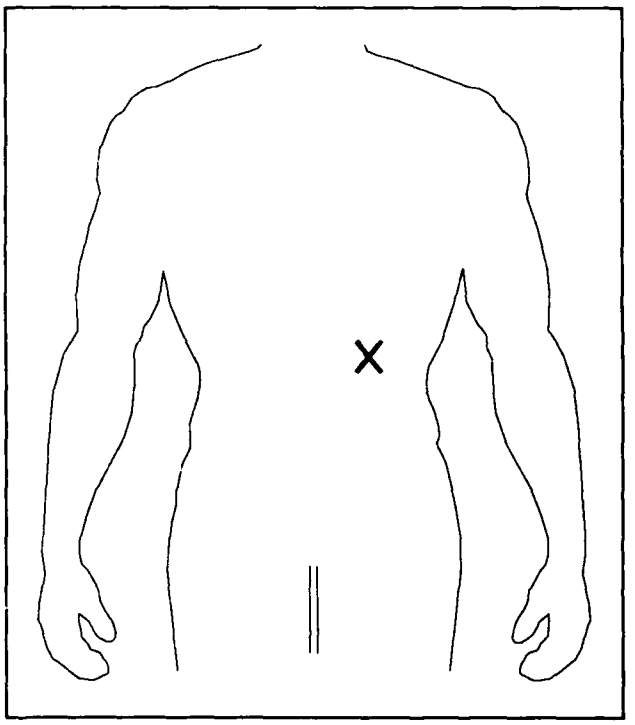
Time:

Dispatched	2306
Dispatch - Hospital	34'
At Scene	17'
Scene - Hospital	30'

Transport Code: 3

Presenting Findings:

Best Eye Opening	4
Gag Reflex	1
Best Verbal	3
Best Motor	4
Bleeding	2
Skin Temperature	2
Membrane Color	2
Capillary Refill	1
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
2324	30/S	L		140	ST	MN	MN	10 11 52 65
2335	30/S	L	100	140	ST	MN	MN	11

Hospital

Arrival Time: 2342
Injury Type: _X_ Abdominal ___ Thoracic

Shock Room Activities	Time
__C-spine ordered	
__ cleared	
X_Vital Signs R 30/S, BP 80, HR 140	2342 - 2343
__IV (established en route)	
__Central line	
X_Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen) (drawn en route)	2343 - 2344
X_Clothes removed, assessment of extent of physical injury	2343 - 2344
X_Chest X-Ray ordered	2342
X_ interpreted	2346
X_Foley catheter	2343 - 2345
X_Urinalysis (dip)	2345 - 2346
__NG tube	
X_Exploration of wound (locally)	2347 - 2348
__IVP (one-shot)	
__Tube thoracostomy	
X_Other: Surgical consult Stat to OR	2347 - 2348

Out of shock room: 2348
Taken to: Operating Room

TEAM

1 Third year surgical resident
1 First year surgical resident
1 RN, 1 LVN
1 Physician Assistant
1 Medical student
1 X-ray technician
1 Radiologist

Age: 35
Sex: Latin American Male
Patient: #5

Injury Type: Stabbing (two penetrations)
Presenting Symptoms: Bleeding

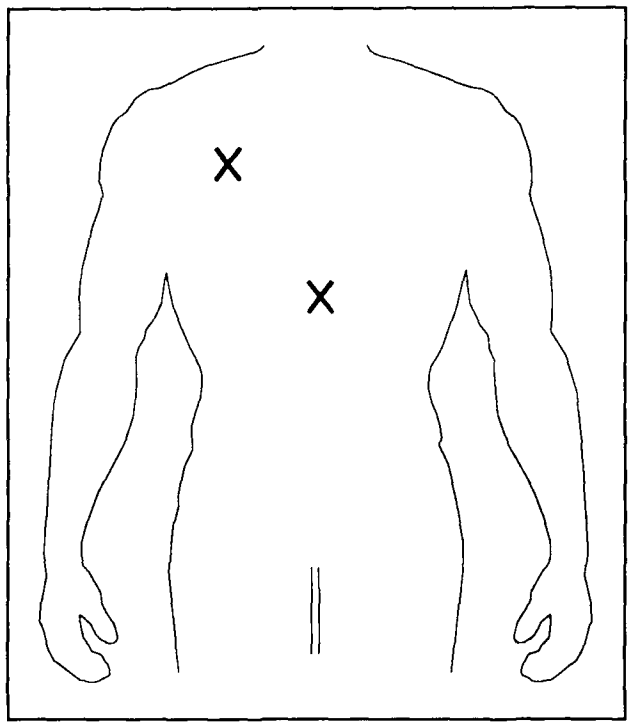
History: Patient found lying supine complaining of stabbing with two penetrations to back. Diminished breath sound bilaterally, left side more diminished than right. Stabbed with ice pick. Two IVs started with 14 gauge needles and plasma-lyte. 2 red and 2 purple tops drawn. Oxygen 10 l/min by nasal cannula, cervical collar and spinal immobilized. Patient delivered in stable condition.

Pre-Hospital

Time:
- Dispatched 2308
- Dispatch - Hospital 33'
- At Scene ...
- Scene - Hospital ...

Transport Code: 2

Presenting Findings:
- Best Eye Opening 4
- Gag Reflex 1
- Best Verbal 5
- Best Motor 6
- Bleeding 2
- Skin Temperature 1
- Membrane Color 1
- Capillary Refill 1
- Motor Function Moves all extremities



Back View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
2320	20/L	L>R	140	74	NSR	MN	MN	10 52 65
2330	22/L	L>R	138	70	NSR	MN	MN	11 51
2335	22/L	L>R	130	72	NSR	MN	MN	

Hospital

Arrival Time:	2341	
Injury Type:	___ Abdominal	_X_ Thoracic

Shock Room Activities	Time
X C-spine ordered	2341
X cleared	2351
X Vital Signs	2341 - 2343
_IV (established en route)	
_Central line	
X Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen)	2402 - 2405
X Clothes removed, assessment of extent of physical injury	2342 - 2347
X Chest X-Ray ordered	2357
X interpreted	0006
_Foley catheter	2310 - 2312
_Urinalysis (dip)	
_NG tube	
_Exploration of wound (locally)	
_IVP (one-shot)	
_Tube thoracostomy	
_Other EKG Monitor	2357 - 2359

Out of shock room:	0015
Taken to:	Holding area

TEAM

1 Third year surgical resident
1 First year surgical resident
1 RN
1 Physician Assistant
1 X-ray technician
1 Radiologist

Age: 35
Sex: White Male
Patient: #6

Injury Type: Stabbing (one penetration)
Presenting Symptoms: Dyspnea, bleeding

History: Patient stabbed 1" above navel with evisceration. Also, lacerations to chin and back of head.

Pre-Hospital

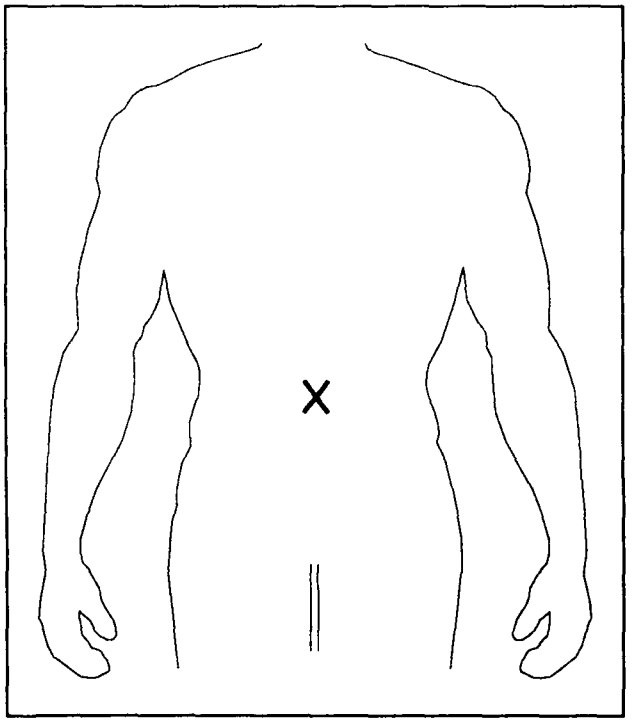
Time:

Dispatched	2307
Dispatch - Hospital	30'
At Scene	14'
Scene - Hospital	21'

Transport Code: 2

Presenting Findings:

Best Eye Opening	4
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	2
Skin Temperature	1
Membrane Color	1
Capillary Refill	1
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
2330	16/N	E	110/60	80	NSR	MN	MN	10 50
2336	16/N	E	100	80	NSR	MN	MN	10 11

Hospital

Arrival Time: 2340
Injury Type: _X_ Abdominal ___ Thoracic

Shock Room Activities	Time
__C-spine ordered __ cleared	
X Vital Signs R 16/N, BP 100, HR 82	2340 - 2342
__IV (established en route)	
X Central line	2400 - 2403
X Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen)	2403 - 2404
X Clothes removed, assessment of extent of physical injury	2340 - 2342
_Chest X-Ray ordered _ interpreted	
X Foley catheter	2350 - 2353
X Urinalysis (dip)	2353 - 2354
X NG tube	0030 - 0034
X Exploration of wound (locally)	2345 - 2350
X IVP (one-shot) Dye injected at 0020	0032
__Tube thoracostomy	
X Other (1) Chin laceration sutured	2309 - 2310
(2) Rectal exam and stool guaiac	2349 - 2350

Out of shock room: 0038
Taken to: Operating Room

TEAM

1 Third year surgical resident
1 First year surgical resident
1 RN, 1 LVN
1 Medical student

Age: 35
Sex: Latin American
Patient: #7

Injury Type: Stabbing (one penetration)
Presenting Symptoms: Dyspnea, bleeding

History: Patient found standing, but complained of being stabbed in the chest. Patient had no idea how long the knife was. Patient alert and oriented to person, place, and time with no loss of consciousness or loss of movement (motor). Patient had shortness of breath. Patient moves all extremities. Pupils equal and reactive to light. Patient complained of no other injury or pain. Put patient on oxygen non-rebreather mask 10 l/min and transported to Ben Taub General Hospital.

Pre-Hospital

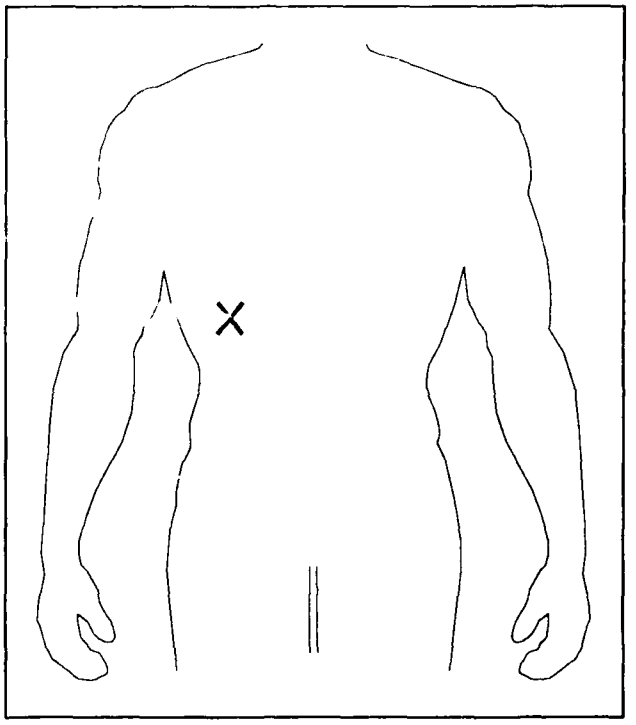
Time:

Dispatched	2345
Dispatch - Hospital	25'
At Scene	13'
Scene - Hospital	20'

Transport Code: 2

Presenting Findings:

Best Eye Opening	4
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	2
Skin Temperature	1
Membrane Color	1
Capillary Refill	1
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
2352	16/L	E	130/100	72		MN	MN	10
0001	16/L	E	88	72		MN	MN	10

Patient transported by Basic Life Support Unit; therefore, no IV lines were started en route.

Hospital

Arrival Time: 0011
Injury Type: _X_ Abdominal ___ Thoracic

Shock Room Activities	Time
__C-spine ordered	
__ cleared	
X_Vital Signs R 16/N, BP 110/70, HR 70	0011 - 0012
X_IV (established en route)	0025 - 0027
__Central line	
X_Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen) (performed by femoral stick)	0027 - 0030
X_Clothes removed, assessment of extent of physical injury	0011 - 0015
X_Chest X-Ray ordered	0025
X_ interpreted	0035
_Foley catheter	
__Urinalysis (dip)	
__NG tube	
X_Exploration of wound (locally)	0011 - 0015
__IVP (one-shot)	
__Tube thoracostomy	
_Other	

Out of shock room: 0037
Taken to: Holding area

TEAM

1 Third year surgical resident
1 First year surgical resident
1 RN, 1 LVN
1 Medical student
1 X-ray technician
1 Radiologist

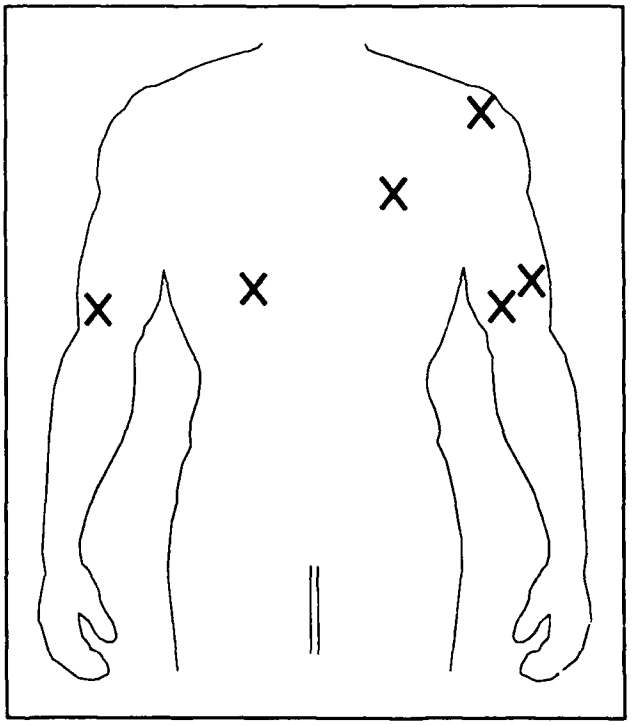
Age:	28
Sex:	Black Male
Patient:	#8

Injury Type:	Gunshot wound with at least six penetrations (.38 or .357 caliber)
Presenting Symptoms:	Altered mental status, lethargy/weakness, bleeding, pain

History: Patient found lying right lateral recumbent with possibly five penetrations with unknown caliber gun. Patient alert and oriented to person, place, and time, complaining of pain in left arm. Patient shot in right elbow, entrance only. Left shoulder with complete closed fracture of humerus. 3 holes in abdomen and chest with breath sounds decreased on left. Neck veins non-distended. Subcutaneous emphysema palpable in left axilla. Oxygen given by 15 l/min non-rebreather mask. 2 IVs with plasma-lyte in right antecubital and right forearm. Patient alert and oriented to person, place, and time until 1087, then began regurgitating a brown substance and having decreased level of consciousness. Medical doctor on board. Placed OP on air holes in abdomen and chest and placed axillary line.

Pre-Hospital

Time:	
Dispatched	2136
Dispatch - Hospital	20'
At Scene	7'
Scene - Hospital	14'
Transport Code:	3
Presenting Findings:	
Best Eye Opening	4
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	4
Skin Temperature	1
Membrane Color	2
Capillary Refill	2
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
2153	16/S	L>R	80	116	ST	MN	MN	10 11 50
2155	18/S	L>R	80	116	ST	MN	MN	11

Hospital

Arrival Time: 2156
Injury Type: _X_ Abdominal _X_ Thoracic

Shock Room Activities	Time
__C-spine ordered	
__ cleared	
X Vital Signs R 24/S, BP 60, HR 120	2156 - 2159
X IV (subclavian cutdown, failed)	2156 - 2201
X Central line	2201 - 2205
X Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen)	2206 - 2207
X Clothes removed, assessment of extent of physical injury	2156 - 2157
X Chest X-Ray ordered	2156
X interpreted	2201
X Foley catheter	2158 - 2200
X Urinalysis (dip)	2201 - 2202
__NG tube	
X Exploration of wound (locally)	2157 - 2202
__IVP (one-shot)	
__Tube thoracostomy	
X Other	
(1) X-ray left humerus	2156
(2) X-ray Left humerus interpreted	2202
(3) Emergency center thoracotomy	2205 - 2223
(4) Suture ventricular wound	2210 - 2212
(5) Resuscitation with 1 amp Ca	2205 - 2223
2 Amp HCO_3	2205 - 2223
1 unit packed red blood cells	2205 - 2223
(6) Rectal exam and stool guaiac	2158 - 2159

Out of shock room: 2225
Taken to: Operating Room

TEAM

1 Third year surgical resident
2 First year surgical resident
2 RN
1 Physician Assistant
1 Medical student
1 X-ray technician
1 Radiologist

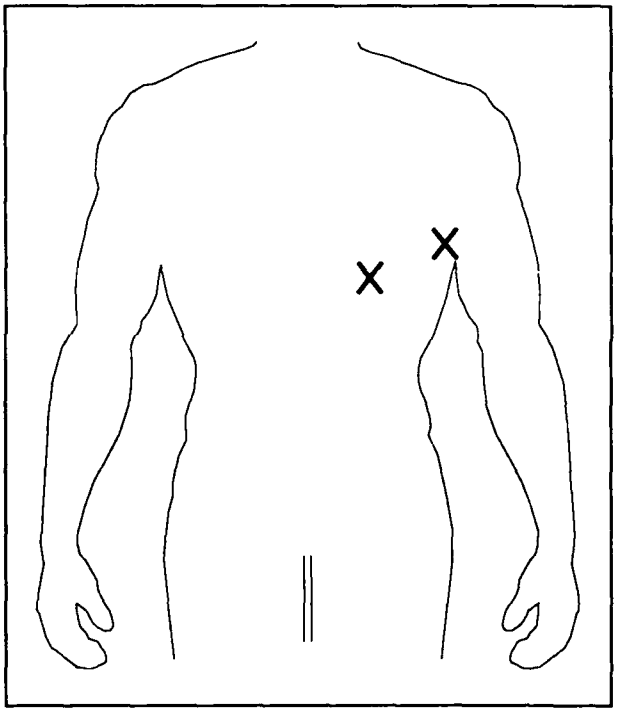
Age:	37
Sex:	White Male
Patient:	#9

Injury Type:	Stabbing (two penetrations)
Presenting Symptoms:	Bleeding, pain, blunt trauma to head (beating)

History: White male with complaints of blunt trauma to head and back with puncture wounds to upper torso and left cheek. Patient was struck with a baseball bat and then poked with the broken end. Patient is intoxicated with alcohol. Alert, pupils equal and reactive to light. Breath sounds clear and equal at the scene. Moves all extremities equally. No other complaint. Oxygen via non-rebreather mask at 15 l/min spinal immobilized. Blood drawn. IV plasma-lyte via 16 gauge in right antecubital fossa. Code 2 to Ben Taub General Hospital.

Pre-Hospital

Time:	
Dispatched	0135
Dispatch - Hospital	35'
At Scene	15'
Scene - Hospital	22'
Transport Code:	2
Presenting Findings:	
Best Eye Opening	4
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	3
Skin Temperature	1
Membrane Color	1
Capillary Refill	1
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
0150	16/N	E	90/60	76	NSR	MN	MN	10 52 65
0158	16/N	E	90	88	NSR	MN	MN	11 51

Hospital

Arrival Time: 0215
Injury Type: _X_ Abdominal _X_ Thoracic

Shock Room Activities	Time
X C-spine ordered	0215
X cleared	0223
X Vital Signs R 16/N, BP 100, HR 85	0215 - 0216
__IV (established en route)	
__Central line	
X Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen)	0220 - 0222
X Clothes removed, assessment of extent of physical injury	0215 - 0217
X Chest X-Ray ordered	0215
X interpreted	0223
X Foley catheter	0237 - 0240
X Urinalysis (dip)	0240 - 0241
__NG tube	
X Exploration of wound (locally)	0218 - 0220
__IVP (one-shot)	
X Tube thoracostomy	0225 - 0234
X Other: Facial laceration sutured	0235 - 0243

Out of shock room: 0250
Taken to: Holding area

TEAM

1 Third year surgical resident
1 First year surgical resident
1 RN, 1 LVN
1 Medical student
1 X-ray technician
1 Radiologist

Age:	20
Sex:	Black Male
Patient:	#10
Injury Type:	Gunshot wound (four penetrations)
Presenting Symptoms:	Dyspnea, pain, bleeding

History: Patient stated he was shot. Patient complained of 1 gunshot wound mid-sternum at the nipple line. One gunshot wound left lower quadrant. 1 gunshot wound right lower quadrant. 1 gunshot wound right upper shoulder. No prior medical history or medications. Patient alert and oriented to person, place, and time. Pupils equal and reactive to light. Breath sounds clearer on left than right. Abdomen slightly rigid and guarded . Moves all extremities. No loss of consciousness. Treated with cervical collar and backboard, oxygen 10 l/min non-rebreather mask. EKG shows NSR. IV left forearm. Second attempt with 18 gauge catheter. Plasma-lyte run wide open. IV plasma-lyte right forearm. Patient very uncooperative, refused to lay down and complained of severe shortness of breath. Transported sitting up. Patient fought and removed cervical collar. The emergency medical technician held traction on patient's head en route.

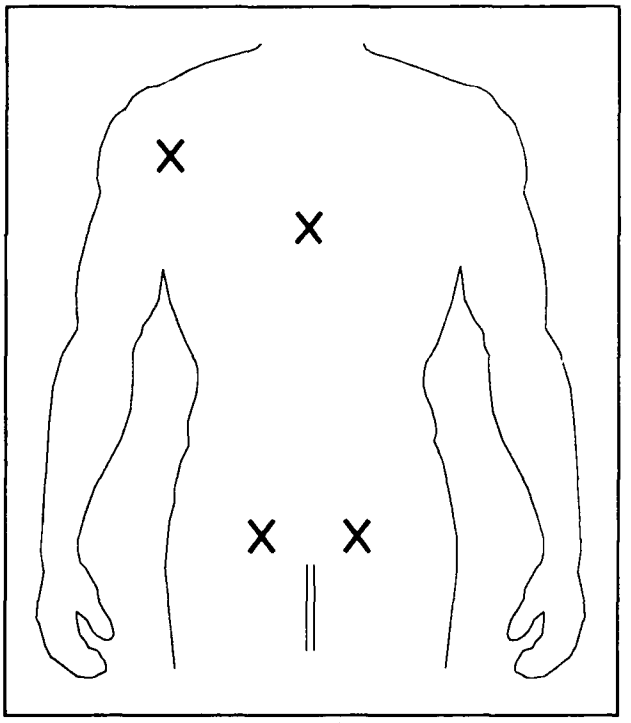
Pre-Hospital

Time:

Dispatched	0318
Dispatch - Hospital	33'
At Scene	11'
Scene - Hospital	24'
Transport Code:	2

Presenting Findings:

Best Eye Opening	4
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	2
Skin Temperature	1
Membrane Color	1
Capillary Refill	1
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
0340	24/L	L>R	90	90	NSR	MN	MN	10 38 52
0346	24/L	L>R	90	90	NSR	MN	MN	11
0351	24/L	L>R	90	90	NSR	MN	MN	11

Hospital

Arrival Time: 0351
Injury Type: _X_ Abdominal _X_ Thoracic

Shock Room Activities	Time
__C-spine ordered	
__ cleared	
X Vital Signs R 24/L, BP 90, HR 90	0351 - 0353
__IV (established en route)	
X Central line	0408 - 0412
X Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen) (performed by femoral stick)	0400 - 0401
X Clothes removed, assessment of extent of physical injury	0351 - 0354
X Chest X-Ray ordered	0351
X interpreted	0401
X Foley catheter	0400 - 0402
X Urinalysis (dip)	0402 - 0403
X NG tube	0433 - 0435
X Exploration of wound (locally)	0355 - 0400
__IVP (one-shot)	
X Tube thoracostomy (pneumothorax)	0406 - 0417
X Other (1) Rectal exam & stool guaiac	0400 - 0401
(2) X-ray (abdomen, pelvis)	0419
(3) X-ray interpreted	0426

Out of shock room: 0442
Taken to: Holding area

TEAM

1 Third year surgical resident
1 First year surgical resident
2 RN
1 Physician Assistant
1 Medical student
1 X-ray technician
1 Radiologist

Age:	33
Sex:	Black Male
Patient:	#11
Injury Type:	Shot gun blast
Presenting Symptoms:	Bleeding

History: Patient has a shot gun blast to the chest. Entrance wounds extend from the neck to the groin, also involving both arms. Patient alert and oriented to person, place, and time. Bilateral breath sounds equal. Pupils equal and responsive to light. Moves all extremities. Skin warm and dry. Abdomen is tender and distended. Started IV with plasma-lyte right forearm and left calf. Patient was put on backboard, but would not lay still. Oxygen 15 l/min non-rebreather mask.

Pre-Hospital

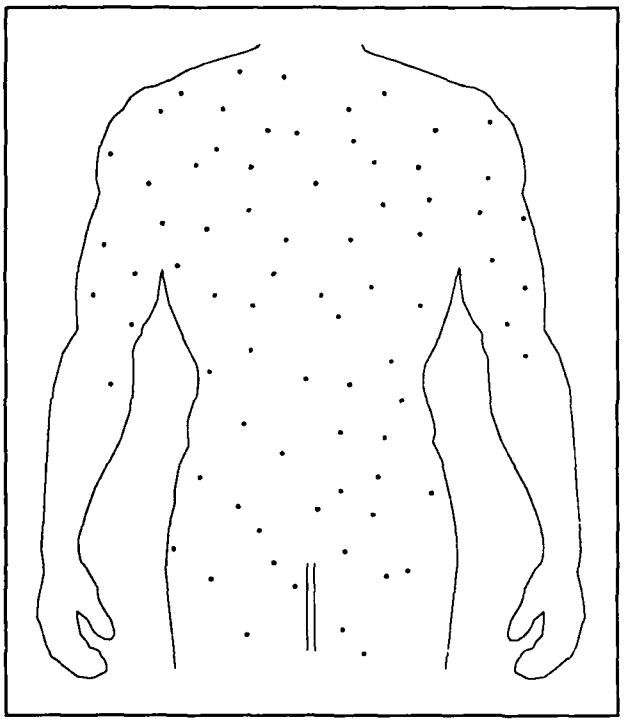
Time:

Dispatched	0134
Dispatch - Hospital	40'
At Scene	4'
Scene - Hospital	30'

Transport Code: 3

Presenting Findings:

Best Eye Opening	4
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	3
Skin Temperature	1
Membrane Color	1
Capillary Refill	1
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
0151	26/S	E	80	126	ST	MN	MN	10 11

Hospital

Arrival Time:	0202	
Injury Type:	_X_ Abdominal	_X_ Thoracic

Shock Room Activities	Time
__C-spine ordered	
__ cleared	
X_Vital Signs R 26/S, BP 80, HR 130	0202 - 0204
X_IV (established en route) plus 2 additional lines	0204 - 0211
X_Central line	0206 - 0210
__Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen) (performed by femoral stick)	0204 - 0205
X_Clothes removed, assessment of extent of physical injury	0202 - 0204
X_Chest X-Ray ordered	0202
X_ interpreted	0208
X_Foley catheter	0206 - 0208
X_Urinalysis (dip)	0208 - 0209
X_NG tube	0215 - 0217
_Exploration of wound (locally)	
X_IVP (one-shot) (IVP dye at 0210)	0221
X_Tube thoracostomy left	0206 - 0210
X_Other (1) Tube thoracostomy right	0211 - 0218
(2) Rectal exam and stool guaiac	0205 - 0206
(3) transfusion 1 unit of PRBC's	0206 - 0220
(4) Aggressive fluid resuscitation	0206 - 0220

Out of shock room:	0235
Taken to:	Operating Room

TEAM

1 Third year surgical resident
1 First year surgical resident
2 RN, 1 LVN
1 Physician Assistant
1 Medical student
1 X-ray technician
1 Radiologist

Age:	24
Sex:	White Male
Patient:	#12
Injury Type:	Stabbing (one penetration)
Presenting Symptoms:	Chest discomfort

History: Ambulance 30 was leaving the station responding to another incident when flagged down in front of the station by a 24 year old White male. Stabbed in the back. Patient had bilateral breath sounds. Placed patient on long spine board. Checked vital signs. Transported Code 2 to Ben Taub General Hospital. Patient had no shortness of breath. No other injuries. One stab wound in back between scapulae.

Pre-Hospital

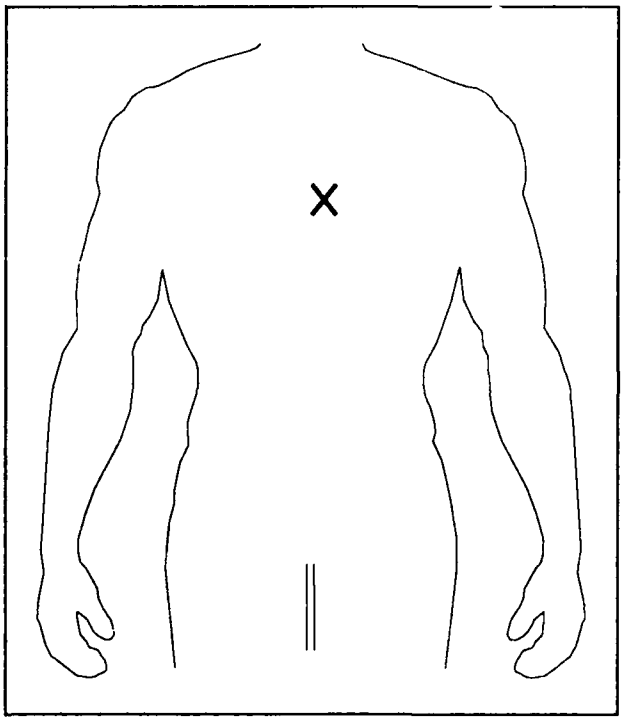
Time:

Dispatched	0047
Dispatch - Hospital	18'
At Scene	1'
Scene - Hospital	17'

Transport Code: 2

Presenting Findings:

Best Eye Opening	4
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	3
Skin Temperature	1
Membrane Color	1
Capillary Refill	1
Motor Function	Moves all extremities



Back View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
0058	16/N	E	130	80		MN	MN	
0105	16/N	E	130	80		MN	MN	

Transported by Basic Life Support Unit. Arrived at hospital without oxygen or IVs.

Hospital

Arrival Time: 0107
Injury Type: ___ Abdominal _X_ Thoracic

Shock Room Activities	Time
__C-spine ordered	
_ cleared	
X_Vital Signs R 16/N, BP 130, HR 80	0107 - 0108
__IV (established en route)	
__Central line	
__Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen)	
X_Clothes removed, assessment of extent of physical injury (partially-patient treated in hallway as shock rooms were full)	0107 - 0108
X_Chest X-Ray ordered	0109
X_ interpreted	0116
_Foley catheter	
__Urinalysis (dip)	
__NG tube	
X_Exploration of wound (locally)	0108 - 0109
__IVP (one-shot)	
__Tube thoracostomy	
X_Other: Spinal injury assessment	0108 - 0109

Out of shock room: Unknown
Taken to: Holding area

TEAM

1 Third year surgical resident
1 First year surgical resident
1 LVN
2 Medical students
1 X-ray technician
1 Radiologist

Age: 17
Sex: Black Male
Patient: #13

Injury Type: Stabbing (one penetration)
Presenting Symptoms: Bleeding, pain

History: Patient has one stab wound in right side of chest under armpit. Alert and oriented to person, place, and time, bilateral breath sounds clear. Pupils equal and reactive to light. Moves all extremities. Pain in chest and right side. No loss of consciousness. Provided 12 l/min oxygen. 16 gauge IV left side and backboarded patient. Transport uneventful.

Pre-Hospital

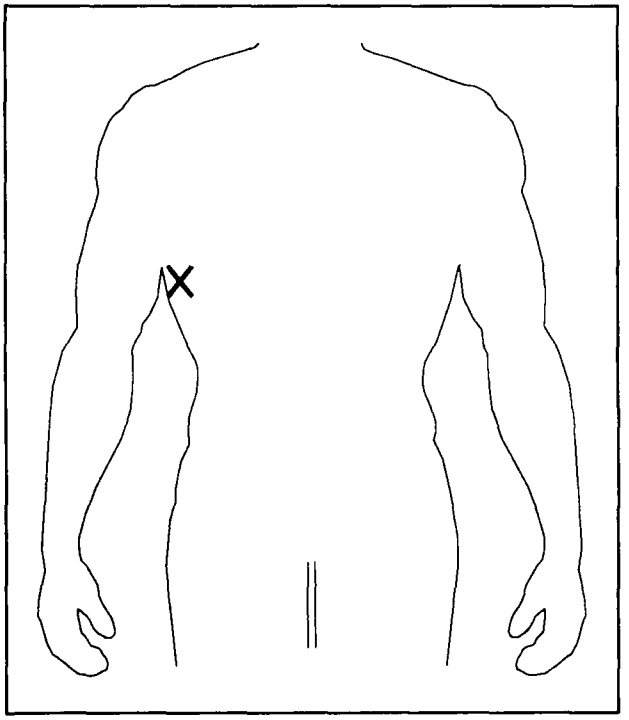
Time:

Dispatched	1925
Dispatch - Hospital	37'
At Scene	20'
Scene - Hospital	32'

Transport Code: 2

Presenting Findings:

Best Eye Opening	4
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	3
Skin Temperature	1
Membrane Color	1
Capillary Refill	1
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
1932	18/N	E	118/70	70	NSR	MN	MN	10 65
1935	18/N	E	118/70	70	NSR	MN	MN	51
1941	18/N	E	118/70	70	NSR	MN	MN	

Hospital
Arrival Time: 2006
Injury Type: ___ Abdominal _X_ Thoracic

Shock Room Activities	Time
__C-spine ordered	
__ cleared	
X Vital Signs R 18/N, BP 120, HR 70	2006 - 2007
__IV (established en route)	
__Central line	
X Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen)	2013 - 2020
X Clothes removed, assessment of extent of physical injury	2006 - 2008
X Chest X-Ray ordered	2006
X interpreted	2011
__Foley catheter	
__Urinalysis (dip)	
__NG tube	
X Exploration of wound (locally)	2007 - 2010
__IVP (one-shot)	
X Tube thoracostomy	2045 - 2100
X Other:	
(1) Bilateral decubitus X-rays for	2309 - 2310
hemopneumothorax ordered	2028
interpreted	2036
(2) Suture laceration right side upper extremity	2115 - 2121
(3) Repeat chest X-ray ordered	2017
(4) interpreted	2022

Out of shock room: 2125
Taken to: Holding area

TEAM

1 Third year surgical resident	1 Physical Assistant
1 First year surgical resident	1 X-ray technician
2 RN	1 Radiologist

Age: 28
Sex: Latin American Female
Patient: #14

Injury Type: Stabbing (one penetration)
Presenting Symptoms: Bleeding, pain

History: Patient complained of self-inflicted stab wound with single penetration to the lower left quadrant with a standard kitchen steak knife with penetration approximately 2". Patient found supine on floor with moderate to severe blood loss. Patient alert and oriented to person, place, and time. Bilateral breath sounds. No loss of consciousness, no loss of memory, no loss of sensation, or shortness of breath. Moves all extremities equally with skin warm and moist. Abdomen soft, but tender to palpation. No pertinent medical history. Treated with oxygen 12 l/min non-rebreather mask. 2 IVs 18 gauge plasma-lyte at wide open rate, 1 in each forearm. Total 700 ml. Unable to draw blood. No change en route. Patient remained stable.

Pre-Hospital

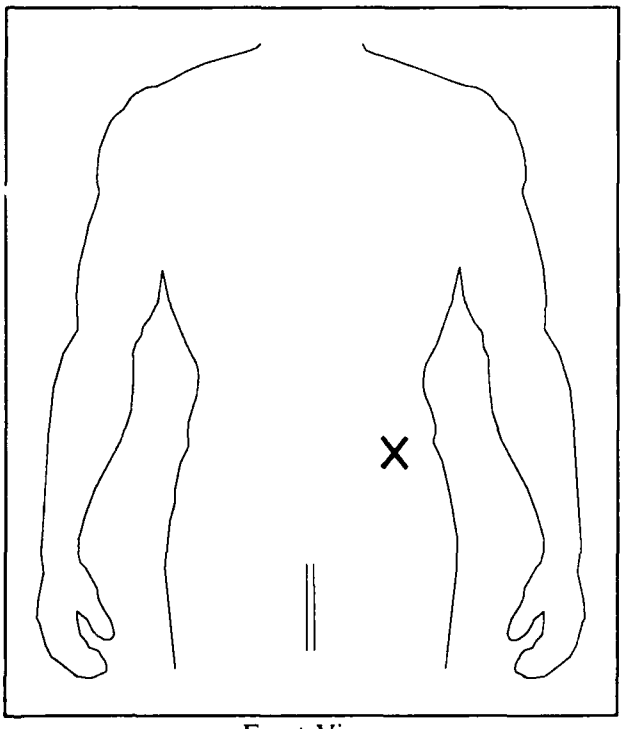
Time:

Dispatched	0115
Dispatch - Hospital	26'
At Scene	7'
Scene - Hospital	19'

Transport Code: 2

Presenting Findings:

Best Eye Opening	4
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	3
Skin Temperature	1
Membrane Color	2
Capillary Refill	2
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
0125	24/S	E	80	120		MN	MN	10
0130	24/S	E	80	124				11
2300	24/S	E	80	124		MN	MN	11

Hospital

Arrival Time: 0142
Injury Type: _X_ Abdominal ___ Thoracic

Shock Room Activities	Time
__C-spine ordered	
__ cleared	
X_Vital Signs R 24/S, BP 80, HR 124	0142 - 0143
__IV (established en route)	
__Central line	
X_Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen)	0147 - 0148
X_Clothes removed, assessment of extent of physical injury	0143 - 0145
X_Chest X-Ray ordered	0146
X_ interpreted	0150
X_Foley catheter	0147 - 0149
X_Urinalysis (dip)	0149 - 0150
X_NG tube	0155 - 0157
X_Exploration of wound (locally)	0148 - 0152
__IVP (one-shot) Dye at 0150	0202
__Tube thoracostomy	
X_Other (1) Rectal exam & stool guaiac	2309 - 2310
(2) Bimanual exam	0201 - 0203

Out of shock room: 0207
Taken to: Holding area

TEAM

1 Third year surgical resident
1 First year surgical resident
2 RN
1 Medical student
1 X-ray technician
1 Radiologist

Age: 20
Sex: Latin American Male
Patient: #15

Injury Type: Stabbing (one penetration)
Presenting Symptoms: Pain

History: Patient received 5" laceration/stab wound to right side of abdomen. No loss of consciousness, no loss of sensation, no loss of memory. Alert and oriented to person, place, and time upon arrival. No prior medical history. Weapon unknown. 18 gauge IV right side and 16 gauge left side, plasma-lyte. Oxygen by mask at 2 l/min.

Pre-Hospital

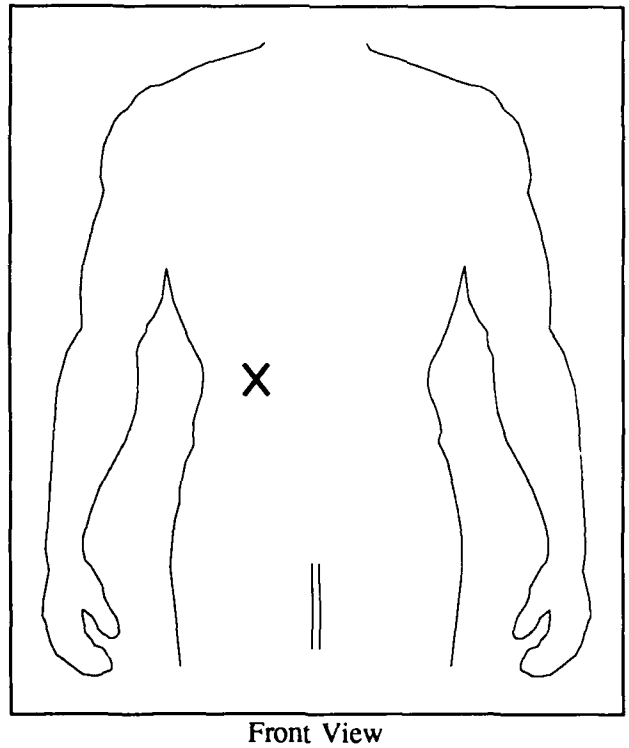
Time:

Dispatched	2238
Dispatch - Hospital	44'
At Scene	11'
Scene - Hospital	24'

Transport Code: 2

Presenting Findings:

Best Eye Opening	3
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	3
Skin Temperature	1
Membrane Color	1
Capillary Refill	1
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
2300	12/N	E	110/70	84	NSR	MN	MN	10 11
2307	12/N	E	110/70	84	NSR	MN	MN	

Hospital

Arrival Time: 2323
Injury Type: _X_ Abdominal ___ Thoracic

Shock Room Activities	Time
__C-spine ordered __ cleared	
X Vital Signs R 12/N, BP 110/70, HR 84	2323 - 2325
__IV (established en route)	
__Central line	
X Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen)	2325 - 2326
X Clothes removed, assessment of extent of physical injury	2323 - 2325
__Chest X-Ray ordered __ interpreted	
X Foley catheter	2330 - 2332
X Urinalysis (dip)	2332 - 2333
__NG tube	
X Exploration of wound (locally)	2325 - 2328
__IVP (one-shot)	
__Tube thoracostomy	
X Other: (1) Additional wound exploration with localization of arterial laceration, internal suturing, and pressure dressing	2331 - 2350

Out of shock room: 2350
Taken to: Holding area

TEAM

1 Third year surgical resident
1 Fourth year surgical resident
1 First year surgical resident
2 Medical student
1 RN
1 X-ray technician
1 Radiologist

Age: 49
Sex: Black Male
Patient: #16

Injury Type: Stabbing (one penetration)
Presenting Symptoms: Bleeding, pain

History: 49 year old black male found in chair on front porch. Alert and oriented to person, place and time. Pupils equal and reactive to light. Bilateral breath sounds equal and clear. Bowel sounds present. Abdomen soft and non-tender. Ambulatory. Intoxicated with alcohol. Complaining of a stab wound to right upper quadrant of the abdomen with a buck knife by his girlfriend. Patient placed on O_2 4 l/min by nasal catheter. IV 16 gauge into left forearm, plasmalyte, total 750 ml given. Blood work drawn - 2 red tops, 1 blue top, 1 purple top.

Pre-Hospital

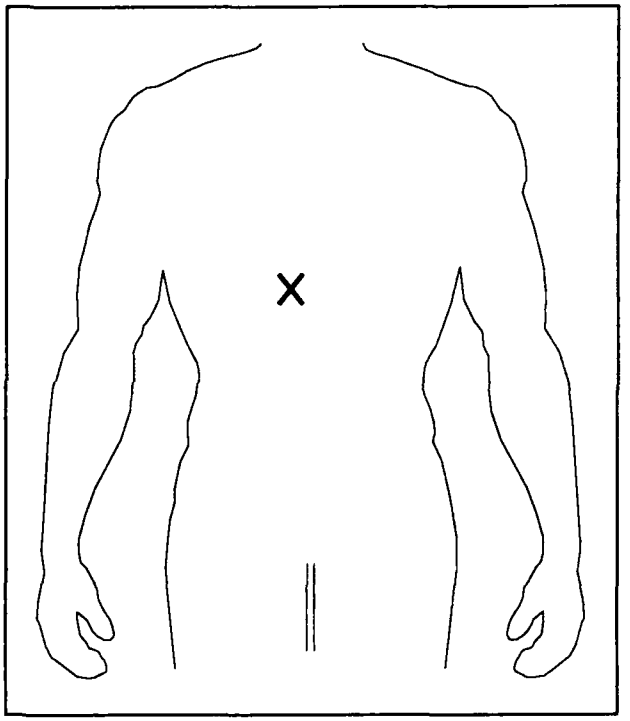
Time:

Dispatched	0136
Dispatch - Hospital	49'
At Scene	17'
Scene - Hospital	32'

Transport Code: 2

Presenting Findings:

Best Eye Opening	4
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	2
Skin Temperature	1
Membrane Color	1
Capillary Refill	1
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
0145	18/N	E	126	100	NSR	MN	MN	10
0205	18/N	E	120/80	90	NSR	MN	MN	51 11

Hospital

Arrival Time: 0235
Injury Type: _X_ Abdominal ___ Thoracic

Shock Room Activities	Time
__C-spine ordered __ cleared	
X Vital Signs R 18/N, BP 120/80, HR 95	0235 - 0236
__IV (established en route)	
__Central line	
X Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen)	0236 - 0237
X Clothes removed, assessment of extent of physical injury	0236 - 0238
__Chest X-Ray ordered __ interpreted	
X Foley catheter	0247 - 0250
X Urinalysis (dip)	0250 - 0251
__NG tube	
X Exploration of wound (locally)	0238 - 0241
__IVP (one-shot)	
__Tube thoracostomy	
X Other:	
1 Stitch placed	0243 - 0245
Rectal exam and stool guaiac	0247 - 0248
Surgical Consult	0300 - 0307
Further Wound Exploration	0300 - 0307

Out of shock room: 0307
Taken to: Holding area

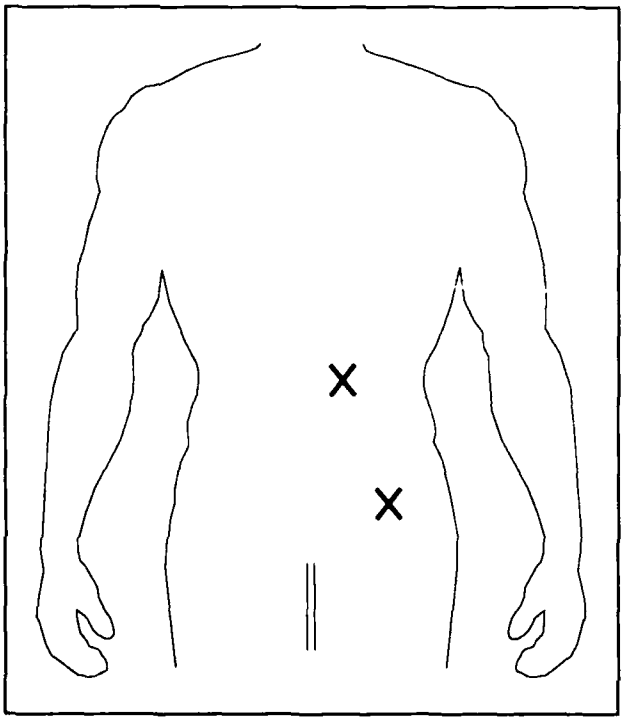
TEAM

1 Third year surgical resident
1 First year surgical resident
1 RN
1 X-ray technician
1 Radiologist

Age:	31
Sex:	Black Male
Patient:	#17
Injury Type:	Stabbing (two penetrations)
Presenting Symptoms:	Bleeding, pain
History:	Paramedic run record unavailable. 2 red tops drawn.

Pre-Hospital

Time:	
Dispatched	...
Dispatch - Hospital	...
At Scene	...
Scene - Hospital	16'
Transport Code:	2
Presenting Findings:	
Best Eye Opening	4
Gag Reflex	1
Best Verbal	5
Best Motor	6
Bleeding	2
Skin Temperature	1
Membrane Color	1
Capillary Refill	1
Motor Function	Moves all extremities



Front View

Paramedics' Activity Flow

	Respiration			HR	Rhythm	Pupils		
Time	Rate Effort	Breath Sounds	BP	(Apical)		L	R	Drugs/Therapy
2238	16/N	- -	118/62	110	- -	- -	- -	10 11

Hospital

Arrival Time: 2254
Injury Type: _X_ Abdominal ___ Thoracic

Shock Room Activities	Time
__C-spine ordered	
__ cleared	
X_Vital Signs R 16/N, BP 118/62, HR 110	2254 - 2256
__IV (established en route)	
__Central line	
X_Lab work drawn (Chem-20, PT/PTT, T & X, Spun Hct, Drug Screen)	2308 - 2310
X_Clothes removed, assessment of extent of physical injury	2254 - 2256
X_Chest X-Ray ordered	2254
X_ interpreted	2259
X_Foley catheter	2259 - 2301
X_Urinalysis (dip)	2301 - 2302
X_NG tube	2328 - 2330
X_Exploration of wound (locally)	2301 - 2305
__IVP (one-shot)	
__Tube thoracostomy	
X_Other: Rectal exam & stool guaiac	2306 - 2307
Diagnostic peritoneal lavage	2329 - 2342

Out of shock room: 2355
Taken to: Holding area

TEAM

1 Fourth year surgical resident
1 Third year surgical resident
1 First year surgical resident
1 RN
1 Medical student
1 X-ray technician
1 Radiologist
1 LVN

* U. S. GOVERNMENT PRINTING OFFICE: 1990--761-051/20103